What is claimed is:

1. An apparatus for channel estimation by using a non-linear filter, comprising:

a multiplier for multiplying an input signal by a reference pilot signal;

a filter for calculating the average value of pilot signals;

an interpolator for computing a tentative estimation value of channel variation by using linear interpolation algorithms based on the average value of pilot signal;

a tentative channel estimation compensator for compensating a channel variable of the data signal delayed in a predetermined time based on the tentative estimation value of channel variation;

a decision block unit for tentatively determining a sign of data signal based on the compensated data signals;

a raw channel estimator for computing a raw channel estimation value based on the output signal of the decision block unit and the data signal delayed in a predetermined time; and

a non-linear filter for computing a final channel estimation value of channel variation based on the tentative estimation value of channel variation and the raw channel estimation value.

2. The apparatus as recited in claim 1, wherein the non-linear filter includes a plurality of taps for computing the final estimation value of channel variation by combining output signals from the taps, wherein the non-linear filter is formed by one tap for providing a weight to the tentative estimation value of channel variation and other taps for providing a weight to the raw channel estimation value.

3. The apparatus as recited in claim 2, wherein the weight is an inverse of the number of taps in the non-linear filter.

4. A method for making channel estimations using a non-linear filter, the method comprising the steps of:

a) calculating the average value of pilot signals;

b) computing a tentative estimation value of channel variation by using a linear interpolation algorithms;

c) compensating the channel variation of the data signal delayed in a predetermined time based on the tentative estimation value of channel variation;

d) tentatively determining a sign of data signal based on the compensated data signal;

e) computing a raw channel estimation value based on the data signal delayed in a predetermined time; and

f) computing the final channel estimation value of channel variation using a non-linear filter based on the tentative estimation value of channel variation and the raw channel estimation value.

5. The method as recited in claim 4, wherein the non-linear filter includes a plurality of taps for computing the final estimation value of channel variation by combining output signals from the taps, wherein the non-linear filter is formed by one tap for providing a weight to the tentative estimation value of channel variation and other taps for providing a weight to the raw channel estimation value.

6. The method as recited in claim 5, wherein the weight is an inverse of the number of taps in the non-linear filter.